low-water stage. A slow, gradual decline is beneficial. The River Commission states in regard to the low-water condition of 1903 that "at the beginning of the season it was expected that the high water of the spring of 1903 would result in the formation of many obstruction bars, and that conditions requiring extensive dredging operations would early develop." "The river did not reach a stage requiring extensive dredging until (nearly the close of the season, on) about December 5." In contrast to this the following fall, 1904, "the dredging season covered the period from August 22 until December 31. . . . Low stages were reached early in the season, and lasted until quite late." The hydrographs of the two seasons show a gradual decline of the flood during the summer of 1903 and a more sudden decline during the same season of 1904. On August 22, when dredging began in 1904, the river had fallen at Vicksburg 23 feet since July 24, or from 54 feet to 31 (Natchez datum), while during the same time during 1903 it fell but 2 feet, from 41 to 39, and it did not reach the 31-foot mark, the dredging-point of 1904, until November 25. Thus, it seems that the low-water channels are not so much affected by the height of the floods of the previous season as by the rate of decline of high water. This rate is influenced by the floods of the lesser tributaries. The second part of the paper discussed the efficiency of the levee system.

GEOGRAPHICAL RECORD.

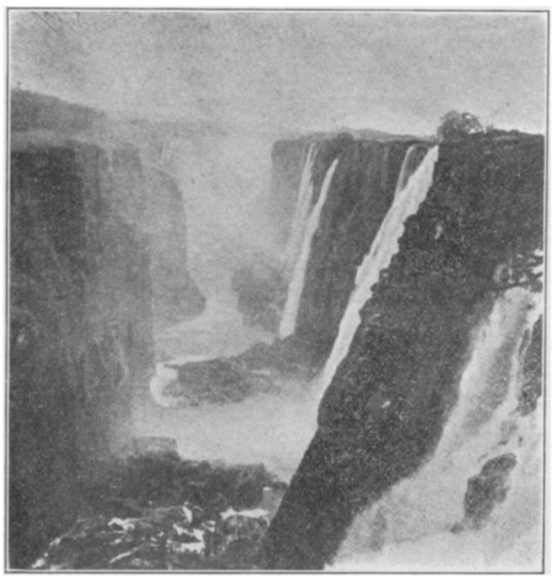
MIKKELSEN'S ARCTIC EXPEDITION.—Captain Ejnar Mikkelsen, of Denmark, a member of Amdrup's expedition to East Greenland, and who has also seen service in Franz Josef Land and on the Greenland west coast, has completed his plans for the exploration of the Beaufort Sea to the north of Alaska. This part of the ocean between the Parry Archipelago and the New Siberia Islands, to the north of the track of the *Jeannette's* drift, is now the largest unknown area of the Arctic. Mikkelsen will enter this region because of his belief (which is shared by some of the leading authorities) that the movement of currents and tides, as well as other facts, point to the probability that there is still undiscovered land in this part of the Arctic.

His enterprise has received substantial support from the Royal Geographical Society and the American Geographical Society. The explorer had collected from various sources abroad all the funds that were thought to be necessary; but when he reached New York, early in February, it was found that he could not depend upon a whaling vessel to reach his destination, as nearly the entire San Francisco fleet is frozen in the ice off the north coast of Alaska. The American Geographical Society has supplied the funds needed to purchase the vessel required.

Having his own vessel, Capt. Mikkelsen will be able to make hydrographical

researches near Bering Strait on his way to Cape Nelson or Cape Kellett on the west coast of Banks Land, where his small party will spend next winter. He hopes to be able to transfer several tons of provisions north to Cape Prince Alfred. He expects to spend 1907 in Banks Land and in Wollaston Land (where he will study the Eskimos who have as yet scarcely met the whites) and hopes also to make a trip to Prince Patrick Island to outline the still unexplored coast. He will procure sledges and dogs from the Eskimos, and early in the spring of 1908 the party will advance to the northern depot and start west over the sea, with thirty dogs, one pony, and provisions for about 132 days. Sounding apparatus will be carried, and it is not the purpose to get north of the continental shelf, as there is every reason to believe that no Arctic land rises from deep waters. The party will endeavour to follow a west-north-west direction to about 76° 30′ N. Lat. and 147° W. Long., and then return southward to Alaska or Wrangel Land. If land is found, only a rough survey will be made of it, and the party will return to organize a more effective expedition.

THE CHASM OF THE VICTORIA FALLS OF THE ZAMBEZI.—This interesting photograph of the chasm of the Victoria Falls was taken by Dr. H. R. Mill, and is published in the January number of *Symons's Meteorological Magazine,* of



CHASM OF THE ZAMBEZI.

which he is the editor. It is the first photograph we have seen of this remarkable chasm. The picture shows the river at a very low stage of water, towards the end of the dry season on Sept. 12, 1905. "In the wet season," writes Dr. Mill, "the enormous volume of water would make it impossible to obtain such a view on account of spray, or to reach the standpoint from which it was taken. The chasm is 400 feet deep and a mile long." The entire river pours over the brink into the chasm and emerges from it through a narrow outlet into the gorge, which extends about 40 miles.

THE EVOLUTION OF SPECIES THROUGH CLIMATIC CONDITIONS.—In *Science* for November 24, 1905, J. A. Allen discusses the evolution of species through climate, in connection with a recent paper (*Science,* Nov. 3, 1905) by President Jordan. In the northern hemisphere most types of birds and mammals of northern origin show a gradual decrease in size from the north to the south in representatives of a conspecific group. This is most marked in the case of birds, in the non-migratory or partly migratory species. The most southern representatives are a fifth to a third smaller than the most northern representatives of the same groups. At the same time, although less generally, there is a relative increase in certain peripheral parts. Secondly, there is a change in coloration, a general restriction in area of white markings, and an increase in area of dark markings, as well as an increase in intensity of colour in areas of tints other than black or white—*e. g.,* yellows, browns, greens, etc., and also in iridescence. In low latitudes, high mountains represent the conditions of higher latitudes nearer sea-level. Grays, browns, and olives are found in regions of heavy rainfall, while pale tints accompany desert areas. Further, regional areas having peculiar climatic conditions show distinctive coloration of their animal inhabitants; in some instances new specific types develop.

In eastern North America, variations in size from north to south are gradual, corresponding with the gradual transition in climatic conditions. The same is true of the gradations in passing westward from the Atlantic to the Pacific and north to Alaska. Topographic conditions do bring about abrupt changes in climate at some points in the latter case, but, in general, the spread of the species is continuous. On the Pacific coast, from Lower California to the Aleutian Islands, there are nine recognized forms of song sparrows, gradually merging, the one into the other, there being no abrupt climatic or geographic barrier anywhere. If some of the intermediate forms were dropped out, the remaining ones might easily be taken for distinct species. Mammals, being sedentary, are even more susceptible than birds to climatic modifications. "In general—in birds and mammals, in which regional modifications are so potent—the main factor is climate, the action general, and the transitions between regions gradual."

R. DEC. W.

CONCLUSIONS OF THE LIGHTNING RESEARCH COMMITTEE.—A Committee organized by the Royal Institute of British Architects and the Surveyors' Institution, and including a representative from the Royal Meteorological Society, has made a report embodying the following practical suggestions:

1. Two main lightning rods, one on each side, should be provided, extending from the top of each tower, spire, or high chimney stack by the most direct course to earth.

2. Horizontal conductors should connect all the vertical rods (*a*) along the ridge, or any other suitable position on the roof; (*b*) at or near the ground-line.

3. The upper horizontal conductor should be fitted with aigrettes, or points, at intervals of 20 or 30 feet.

4. Short vertical rods should be erected along minor pinnacles, and connected with the upper horizontal conductor.

5. All roof metals, such as finials, ridging, rain-water and ventilating pipes, metal cowls, lead flashing, gutters, etc., should be connected to the horizontal conductors.

6. All large masses of metal in the building should be connected to earth either directly or by means of the lower horizontal conductor.

7. Where roofs are partially or wholly metal-lined, they should be connected to earth by means of vertical rods at several points.

8. Gas-pipes should be kept as far away as possible from the positions occupied by lightning-conductors, and, as an additional protection, the service mains to the gas-meter should be metallically connected with house services leading from the meter. R. DEC. W.

FORMATION OF NATURAL BRIDGES.—It is commonly believed that natural bridges, of which the Natural Bridge of Virginia is the best-known American example, are due to the falling in of cavern roofs, leaving only a part to span the stream which the destruction of the cavern has brought to the surface. By a study of the North Adams Natural Bridge, Professor Cleland has been led to the conclusion that in this case, at least, the origin is quite different. In this case the bridge seems to be due to the solution of the limestone along a joint plane near the former course of Hudson brook. At first only a small amount of water seeped along the joint plane, but after awhile it made a channel large enough to divert the entire brook under the surface, giving rise to the bridge. Walcott had previously offered a similar theory for the Natural Bridge of Virginia, and Cleland concludes that, while the falling in of cavern roofs may occasionally give rise to natural bridges, the most common cause for such bridges in marble, limestone, sandstone, and lava is that outlined above. R. S. T.

NOTES.

PROFESSOR ALBRECHT PENCK, of Vienna, has accepted the Professorship of Geography in the University of Berlin, left vacant by the death of Professor von Richthofen.

The *Revue de Géographie,* long published by Delagrave of Paris as a monthly, will hereafter appear as an annual review.

The *American Geologist,* which began publication in 1888, was consolidated on January 1st with the new journal *Economic Geology,* published at Lancaster, Pa. Professor Winchell, the editor, says that he relinquishes this scientific service owing to his desire, with advancing years, to find time for other contemplated work. The *American Geologist,* in the eighteen years of its existence, has certainly contributed its part to geological research and to improvements in the methods of geological work. It has been a monthly journal, but the new publication will appear semi-quarterly.

AS ANNOUNCED IN THE BULLETIN FOR 1905 (page 677), the Tenth International Geological Congress will meet on the 6th of September next in the City of Mexico.

Circular No. 2, issued by the Committee on Organization, presents a programme of excursions before the meeting of the Congress: one of 4 days, limited to 250 persons; one of 8 days, limited to 40 persons; one of 14 days, and one of 7 days, limited to 30 persons.

Four short excursions will be made during the session; and after the close of the Congress there will be two excursions, one of 20 days, limited to 250 persons, and one of 7 or 8 days, limited to 60 persons.

The cost of the excursions will be 20 francs a day for each person, and the price of passage by steamer and railway lines will be reduced 50 per cent.

Membership in the Congress (including a copy of the Report) is to be

obtained by payment of 20 francs (8 Mexican dollars) to the Treasurer of the Committee on Organization, Mr. Juan D. Villarello, 5a del Ciprés No. 2728, Mexico, D. F.

THE NINTH INTERNATIONAL GEOGRAPHICAL CONGRESS.—A communication from the Geographical Society of Geneva, Switzerland, announces that the Ninth International Congress will be held in that city from July 27 to August 6, 1908.

A preliminary programme, together with a circular invitation, will be issued during the present year by the Committee on Organization.

BULLETIN OF THE GEOGRAPHICAL SOCIETY OF PHILADELPHIA.—This publication will hereafter be issued quarterly. The January number, in the high quality of its contents and its fine typographical appearance, maintains the reputation of the Society. The contents include a discussion of the Arctic drift-cask experiment by Rear-Admiral Melville and Henry G. Bryant, President of the Society; the first of a series of articles dealing with the regional and economic geography of Pennsylvania, by Walter S. Tower; a Survey, by Prof. R. DeC. Ward of Harvard, of some of the relations between weather and climate and a few of the more important diseases; a description of two geographical excursions by the Society from the pen of Mary S. Holmes; a short sketch of the life-work of the late Baron von Richthofen, and a list of recent accessions to the library. The Publication Committee which has the *Bulletin* in charge is composed of Prof. Emory R. Johnson, chairman, Laura Bell, Henry G. Bryant, and Walter Sheldon Tower.

THE ROYAL BOHEMIAN SCIENTIFIC SOCIETY, of Prague, announces the death on the 19th of January of its former Vice-President, Privy-Councillor KARL RITTER VON KORISTKA, in the 81st year of his age.

U. S. BOARD ON GEOGRAPHIC NAMES.—Decisions January 3, and February 7, 1906:

ALATNA: River, northern Alaska; large branch of Koyukuk River from the northwest. (Not Ah-lash-ok, Alashuk, Al-lash-ook, Allatna, Allen, Allenkakat, nor Oklashok.)

CHEAHA: Mountain, Clay County, Alabama. (Not Blue, Che-aw-ha, Chehaw, Che-haw-haw, nor Shinbone.)

GALOP: Island in the St. Lawrence River, St. Lawrence County, New York. (Not Gallop, Galloup, Galoup, Ile aux Galops, Isle au Gallop, nor Isle au Galop.)

JOHN: River, northern Alaska; tributary to Koyukuk River from the north near longitude 152°. (Not Alchickna, Ascheeshna, Fickett, nor Totsenbetna.)

KITTATINNY: Mountains, New Jersey and Pennsylvania. (Not Blue nor Kitatinny.)

*LINK: River connecting Upper and Lower Klamath Lakes, Oregon. (Not Klamath.)

MITYLENE: City and Island, Turkey. (Not Metelin, Mytilene, nor Mytilini.)

POROPOTANK: Creek, between King and Queen County and Gloucester County, Virginia. (Not Potopotank.)

PRATT CITY: Postoffice, railroad station, and town, Jefferson County, Alabama. (Not Pratt Mines.)

SHOSHONE: Indian Reservation, Fremont County, Wyoming. (Not Wind River.)

* Reversal of former decision.

SPOTTSYLVANIA: County and courthouse, Virginia. (Not Spotsylvania.)

STOREY: Island, Prince William Sound, Alaska; just north of Naked Island. (Not Little Naked nor Story.)

STOREY: Slough; one of the outlets of the Copper River, Copper River delta, Alaska. (Not Story.)

WESKEAG: River, South Thomaston town, Knox County, Maine. (Not Gig, Keag, Wessawaskeag, Wessaweskeag, nor Westkeag.)

WILD: River, northern Alaska; a large affluent on the north side of Koyukuk River, near longitude 151° 30′. (Not Hokotena, Totsenbet, Totsenbetna, Totzunbetna, nor Totzunbitna.)

BIG FLATS: Town, Chemung County, New York. (Not Bigflats.)

BLOCTON: Town, Bibb County, Alabama. (Not Blockton.)

GORHAM: Mountain, Mt. Desert Island, Hancock County, Maine.

ICICLE: Stream emptying into Wenatchee River, near Leavenworth, Chelan County, Washington. (Not Nacicle.)

IGNACIO: Lakes west of Animas Canyon, La Plata County, Colo. (Not Bishop, Columbine, Mamor, Molar, Pierce, Rockwood Lakes, nor Cascade Reservoir.)

KATALLA: Bay, river, slough, and town, Alaska, near Controller Bay, Gulf of Alaska. (Not Catalla nor Catella.)

NAVAJO: County, creek, reservation, spring, town, and valley, Navajo County, Arizona. (Not Navaho nor Navajoe.)

UINTA: County, mountains, reservation, river, town, and valley, Uinta County, Utah. (Not Uintah.)

WETUMPKA: City and precinct, Elmore County, Alabama. (Not Wetumka.)

AMERICAN GEOGRAPHICAL SOCIETY—TRANSACTIONS FOR DECEMBER AND JANUARY.—On the 21st of December, 1905, the Council by unanimous vote awarded the Cullum Geographical Medal to Captain Robert F. Scott, R. N., for the Voyage of the ship Discovery and his sledge journey to latitude 82° 17′ S.

Transactions of the Society, January 5, 1906.—A Regular Meeting was held at Mendelssohn Hall, No. 119 West Fortieth Street, on Friday, January 5, 1906.

Mr. Charles S. Fairchild in the chair.

The following persons, recommended by the Council, were elected Fellows:

Samuel T. Armstrong.
A. F. Estabrook.
J. G. Battelle.
Charles S. Butler.
André Champollion.
Edward Russell Coffin.
Thomas H. Curtis.
John F. Brooks.
Frank M. Cronise.
H. G. Dalton.
Francis C. Green.
Thomas Powell Fowler.
G. Stanton Floyd-Jones.
Jed Frye.
Frederick R. Franke.
Henry J. Gielow.
Robert R. Hollister.
John H. Bennett.
George H. Smith.
James H. Hickey.
John A. Hadden, Jr.
Gurden B. Wallace.
V. Clement Jenkins.
C. Ledyard Blair.
LeRoy Harvey.

The Chairman then introduced Dr. Otto Nordenskjöld, Commander of the Swedish Antarctic Expedition, who described the events of Two Years in the Ice of the South Pole.

Stereopticon views were shown.

On motion, the Society adjourned.

The Annual Meeting of the American Geographical Society was held at Mendelssohn Hall, No. 119, West Fortieth Street, on Tuesday, January 30, 1906, at 8.30 o'clock, P. M.

Mr. A. A. Raven in the chair.

The following persons, recommended by the Council, were elected:

Honorary Member—William M. Davis, Professor of Geology in Harvard University.

Fellows:

Arthur B. Lovejoy.
Richard P. Hart.
Stuart F. Randolph.
Mansfield Ferry.
A. Duane Doty.
Richard Billings.
James A. Garland.
Charles Landon Jones.
J. de F. Junkin, Jr.
Eugene Limedorfer.
William R. Moody.
Robert Lewis McKnight.
William E. Merrill.
Benjamin A. Morton.
William Houston Kenyon.
August Kuhn.
G. L. Kittredge.
W. J. Denholm.
Daniel S. Knowlton.
David H. Lyon.
Gustave Loeb.
Alexander McDonald.
W. K. Jewett.
Deming Jarves.
A. I. Moxham.
William F. O'Callaghan.
Lewis R. Morris.
Charles Oakes.
Henry F. Owsley.

The Annual Report of the Council was then submitted and read:

NEW YORK, January 18, 1906.

To the American Geographical Society:

The Council respectfully submit the following report for the year 1905:

The number of Fellows on the 1st of January was 1,265. The additions during the year were 178. The losses by death, resignation, etc., were 88, and the total Fellowship on the 31st of December was 1,355, of which number 368 were Life Fellows.

The additions to the Library number 4,594: Periodicals and Pamphlets, 3,588; Books, 637; Maps and Charts, 356; Atlases, 13.

Five Regular Meetings of the Society were held:

On the 24th of January President Peary addressed the Society on the Geographical Work of the World in 1904;

On the 21st of February Mr. Adolphe F. Bandelier described the Region of Lake Titicaca;

On the 28th of March Mr. Harlan I. Smith gave an account of Recent Archæological Discoveries in North Western America;

On the 18th of April Prof. E. L. Stevenson addressed the Society on the World as seen through the eyes of Mediæval Map-makers;

On the 28th of November Mr. Bailey Willis related his Experiences among the Chinese.

There have been published in the BULLETIN, besides the Record, the Scientific Notes and the Book Reviews, thirty-one original papers.

For the condition of the finances reference is respectfully made to the report of the Treasurer, herewith presented.

Rooms in the Society's house have been placed at the disposal of the Geography Teachers' Association and the Association of American Geographers for their meetings.

All of which is respectfully submitted.

HENRY PARISH, *Chairman.*

LEVI HOLBROOK, *Secretary.*

The report of the Treasurer was then read:

Report of the Treasurer to the American Geographical Society for the year 1905:

GENERAL ACCOUNT.

The Treasurer respectfully reports:

On January 1, 1905, there was on hand a cash balance of		$2,600.71
During the year there have been received for Fellowship Dues, Sales of Publications, Interest on Investments, etc.		$22,598.01
		$25,198.72
There have been expended for Salaries, Meetings, Library, Publications, House Expenses, Insurance, Postage, etc.	$19,806.10	
Contribution to Peary's Arctic Expedition	1,000.00	
Invested in Mortgage	900.00	$21,706.10
On December 30th there was on hand a cash balance of		$3,492.62

Respectfully submitted,

WALTER R. T. JONES, *Treasurer.*

The Committee charged with the duty of selecting candidates for the offices to be filled made the following report:

NEW YORK, January 18, 1906.

To the Council of the American Geographical Society:

The Committee appointed to recommend to the Society suitable persons to be elected in January, 1906, to fill vacancies then existing in its offices, respectfully report that they recommend the election of the following-named persons to the offices below designated:

President.....Robert E. Peary (Term to expire in 1907).
Vice-President.....William H. H. Moore (Term to expire in 1909).
Treasurer.....Walter R. T. Jones (Term to expire in 1907).
Foreign Corresponding Secretary.....William Libbey (Term to expire in 1909).

Councillors.....{Francis M. Bacon, John Greenough, S. Nicholson Kane, M. Taylor Pyne, J. Hampden Robb.} (Terms to expire in 1909).

{Henry Parish, L. Holbrook, A. A. Raven.} Committee.

Mr. C. C. Adams moved that Dr. Ralcy H. Bell be authorized to cast the vote of the Society for the candidates. The motion was seconded; Dr. Bell cast the vote and the candidates were declared duly elected.

The Chairman then read the following:

At the meeting of the Society held at Mendelssohn Hall, November 28, 1905, Mr. F. M. Bacon proposed that the By-Laws be amended as follows:

Amend Chapter I., Section 5, so that it shall read, "The name of any Fellow or Member of the Society may be dropped from the list by vote of the Council, without reference to the Society."

In accordance with Chapter XIII. of the By-Laws the proposed amendment was referred to the Council for consideration and report.

In Council December 21, 1905, the proposal to amend the By-Laws was considered and it was

Resolved, That the proposed amendment of Section 5, of Chapter I., of the By-Laws is eminently proper and should be adopted by the Society.

Resolved, That the Chairman or Secretary of the Council is requested so to report to the Society at its next meeting.

The Chairman then called for the yeas and nays on the adoption of the amendment and it was unanimously adopted.

Mr. Poultney Bigelow, the speaker of the evening, was introduced. He addressed the Society on An American Panama—some personal notes on Tropical Colonisation as affected by Geographic and Political Conditions. Stereopticon views were shown.

On motion, the Society adjourned.

NEW MAPS.

CANADA.—Resource Map of the Dominion of Canada. Scale, 1:12,000,000, or 197.3 statute miles to an inch (?). By James White, Geographer, Department of the Interior. Ottawa, 1905.

The distribution of agricultural, mineral, and other resources is shown by sprinkling the name of products over the map. This method must needs answer until sufficient information is available for showing approximately the areas of the resources and their distribution. A part of western Nova Scotia is one of the finest apple regions in America. But the word "fruit" stamped on this map gives little idea of the extent and approximate position of the part of the peninsula covered by these orchards. Some of the coal-field areas, however, are indicated, and the positions of the collieries are shown. The map will be helpful to students. A little manual of 20 pages gives the latest economic statistics of the Dominion. If the scale of miles is 197.3 statute miles to an inch, as printed on the map, the natural scale is 1:12,500,000.

LONDON.—Stanford's New Map of the County of London. Scale, 1:15,840, or 4 inches to a statute mile. 20 sheets. London: Edward Stanford, 1905. (Price, in sheets, 15s.)

This clearly-printed and excellent map in colours is a new edition, in which recent important changes have been inserted and the whole map carefully revised. The new edition is thoroughly up to date and will maintain the reputation of this